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more than forty, sat between her two delicate and slender daughters, as the full moon between two sparkling planets, or a plump partridge flanked by two quails; and she had such a good complexion!—neck, nose, and forehead, as fair as alabaster; cheeks "*à coleur de rose*" no broken veins, no faded swarthiness betraying the cruel fact, that the sear and autumnal tints were evidencing how time had frost-bitten her beauty.

You may suppose that our horses' heads were soon directed down the hill; and as fast as we could drive we wended our way to Mermount; the particulars of our entertainment there, with its accompanying casualties, shall, perhaps, form the subject of a future epistle.

Matthew Bobbinbottom.

POPULAR LECTURES ON THE PHYSIOLOGY OF ANIMALS.

An abstract of Dr. Henry's sixth Lecture.

THE NOSE.

The apparatus belonging to the sense of smell consists simply of a nerve expanded upon a delicate membrane lining the interior of the upper part of the nose. The odorous particles enter with the air, and make an impression on the sentient extremities of the nerve, by means of which the impression is conveyed to the brain. In order that you may better comprehend how this is effected, you will recollect, First, that there is a free passage through the nose to the back part of the mouth or throat. Secondly, that every time we inspire, the external air rushes through this passage and enters the lungs, and that every time we expire, the air passes from our lungs through the nose to the external atmosphere. Thirdly, that there is also another passage from the back part of the throat—I mean through the mouth—by which the air passes and repasses from the lungs at the same time as it passes through the nose, and that, therefore, it passes with greater force, and in greater quantity through the nose if the mouth be shut. Accordingly, when we wish to smell any object or to snuff up any odour, we shut the mouth and inspire freely through the nose, so that a greater quantity of the effluvia may pass through the nose, and come more readily into contact with the olfactory nerves, which are seated high up in the nose. As there are two eyes and two ears, so there are, properly speaking, two organs of smell, or two nostrils; but these two nostrils being placed close beside each other, have the appearance of being only one organ, and this organ is called the nose. The two nostrils are perfectly distinct, having no communication with each other, and each being supplied with a separate olfactory nerve. The membrane lining the nostrils and having the sentient extremities of the olfactory nerve in its substance, must be moist, in order that the impression of odours may be perfectly received by the nerve; and, accordingly, we find it smeared with a peculiarly tenacious fluid, which performs the two offices of keeping the membrane moist, and of entangling the odorous particles, so as to render their contact with the sentient extremities of the nerve more permanent. When this fluid is increased, as in a common cold, it constitutes what was formerly called a rheum, or defluxion from the head; because, before the nature of the secretion was understood, it was supposed that this discharge came from the brain: even at this day there are some persons to be met with who retain this notion. The nostrils are moistened not only by this secretion of their own lining membrane, but by the tears or moisture of the eyes, which is carried off from the eyes and discharged into the lower part of the nostrils by means of the nasal ducts, to be described when we come to speak of the eye. To these two sources of moisture we may add a third, the expired air, which is always charged with moisture acquired in the lungs. If the expired air were dry, like the inspired air, the natural moisture of the air passages would be quite insufficient to keep them in a moist state. They would speedily be dried up by the dry air passing through them, and would become unfit for their offices. The extreme distress arising from a dry state of the air-passages, i.e., of the mouth and nostrils, is well known to those who have suffered typhus fever, or witnessed the sufferings of others in that disease. Those parts of the pituitary or lining membrane of the nostrils which are nearest to the external atmosphere or the tip of the nose, do not perceive scents; the power of perceiving scents being confined to the upper parts of the membrane, which receive the branches of the olfactory nerves; hence the snuffing of animals when they trace objects by the scent. The other parts of the membrane are, however, not useless. They serve to break the too sudden and violent approach of the air to the olfactory part of the membrane, and to give notice to the individual of the entrance of foreign substances, as insects, dust, motes, &c., into the nostrils, and so to stop the access of such bodies both to the windpipe and to the olfactory portion of the membrane, which should be always kept clean from foreign substances, and which should, moreover, in order to the perfect exercise of its function, be a little removed out of the way so as to be occasionally only, not constantly, acted upon by external impressions. The extremity of the nostrils, just where the internal membrane merges into the common skin, has the most delicate sense of touch, and is furnished with hairs, which serve the purpose of feelers, while at the same time they close up the passage against foreign bodies. This is less necessary in man who has such an excellent protection in his hand, and who is besides less liable to the attacks of insects, but in other animals this defence to the opening of the nostril is absolutely necessary. An additional protection is afforded by the power which man and some other animals possess of expelling extraneous bodies from the nostrils by the act of sneezing.

The elephant is remarkable for his delicate sense of smell. His trunk is the continuation of the nose or nostrils. It is so flexible, and at the same time so well supplied with muscles, as to constitute an exquisite organ of touch or prehension, as well as an organ of smell. There is a sudden turn in the tubes of the proboscis, at some distance from the tip, which prevents liquids drawn into them from passing further, and thus enables the animal to hold water in them, which he can afterwards discharge into his mouth or into the air at pleasure. In the whale tribe the existence of an olfactory nerve, and consequently of the sense of smell, is still disputed by physiologists. In these animals the blowing hole serves the double purpose of respiration and of rejecting the water which is taken in along with their food. In birds, the structure of the organ of smell is similar to that which is found in man and quadrupeds.—There are as great differences in this respect among birds as among quadrupeds. The grallœ, or waders, and the anseres, or swimming birds, have the keenest powers of smell. Scapa relates that in making experiments on the relative powers of smelling in birds, he gave a piece of scented bread to a duck: the duck snatched the food eagerly, but perceiving the extraordinary odour, dropped it suddenly, then, as it were, recollecting itself, took it up again, carried it to a pool of water, dipped it in it several times until it was well washed, and then swallowed it. In the osseous fishes there are two openings on the upper part of the snout, one on each side; at the bottom of each of these cavities there is a membrane disposed in folds radiating from a centre: on this membrane the olfactory nerve is distributed. As fishes live in water, and do not breathe through nostrils, as land animals do, the odorous particles are not drawn into the nose by respiration, but being involved in the water, the water is admitted into these openings, and thus the odorous particles brought into contact with the olfactory membrane. These membranes are thickly smeared with a glutinous substance, in order to protect them from the injurious influence of the water. The opening of each of these cavities is furnished with a sort of a lid or valve, which the animal moves at will by means of a muscle, and can thus admit, exclude, or retain the water in the cavity, and so, if not perfectly, at least to some extent, regulate the sense of smell. It is said that the sense of smell fishes is so acute, that by merely scattering odoriferous substances about the mouth of a cavern containing water in which there are fishes, they can be enticed to the mouth of the cavern so as to become the ready prey of the fisherman.

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